

RF Front End Based on MEMS Components for Miniaturized Digital EVA Radio, Phase I

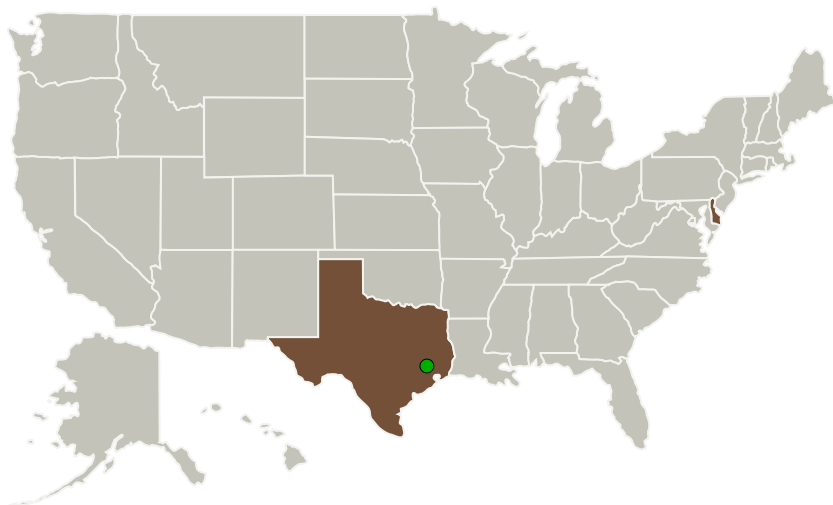
Completed Technology Project (2010 - 2010)




Project Introduction

In this proposal, AlphaSense, Inc. (AI) and the Carnegie Mellon University (CMU) detail the development of RF front end based on MEMS components for miniaturized digital EVA radio. Key innovations of our approach include: a) the use of a novel parallel receiver front end architecture based on MEMS components, b) a novel design of a high Q mixer-filter for RF mixing and IF filtering, and c) the implementation of band pass filter and voltage controlled oscillator (VCO) using CMOS fabrication technique. Consequently, the proposed EVA radio has the following merits: a) Small size, light- weight and low power consumption, b) High sensitivity and frequency selectivity, c) Good device reliability, and d) Easy device fabrication and low manufacturing cost.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
AlphaSense, Inc.	Lead Organization	Industry Women-Owned Small Business (WOSB)	Wilmington, Delaware
 Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas



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Primary U.S. Work Locations

Delaware

Texas

Project Transitions



January 2010: Project Start



July 2010: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139965>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

AlphaSense, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Pengcheng Lv

Co-Investigator:

Pengcheng Lv

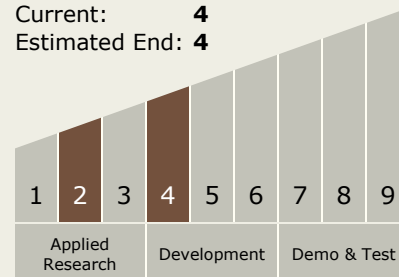
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Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.2 Radio Frequency
 - └ TX05.2.1 Spectrum-Efficiency

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System